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Analysis Of Factors Influencing Project Failure Risk On Development Building In Tangerang Using SEM PLS And IPMA Methods

Dede Iskandar[1], Erry Rimawa[2], Mawardi Amin[3]
[1]Department of Civil Engineering, Faculty of Engineering, University Mercury Buana, Indonesia
Corresponding Author: Erry Rimawan: erry.rimawan@mercubuana.ac.id

***Abstract**:*
Risk failure in project construction Building is challenge main Which This has implications for financial losses, delays, and quality degradation. This study aims to analyze the influence of human resources, project management, and quality on the risk of failure of building construction projects in Tangerang. A quantitative method was used with the Structural Equation Modeling Partial Least Square (SEM-PLS) approach and Importance Performance Map Analysis (IPMA) as analytical tools. The results show that all three independent variables influential significant against risk failure project, Good directly and through role mediation. IPMA identify that improvement Project management and work quality are priority areas in risk mitigation strategies. This study makes a significant contribution to the construction management literature and offers strategic guidance for industry stakeholders in improving project efficiency and effectiveness.
Keywords : *risk failure project, SEM-PLS, IPMA, management project, quality project*

1 INTRODUCTION

Development the building is one of the sectors is crucial in the construction industry, particularly in rapidly developing urban areas like Tangerang. This city is experiencing significant economic growth and urbanization, driving an increased need for vertical infrastructure, including residential, office, and public facilities. However, amid this surge in development, construction projects often face significant pressures in terms of cost, time, and quality .

Phenomenon failure project construction building in Tangerang No only impact on technical aspects implementation, but Also cause consequence economy Which Enough Serious. Project failure can take the form of delayed completion, budget overruns, poor work quality, and even stakeholder dissatisfaction. This ultimately impacts reputation company construction, trust investors, as well as efficiency budget public if the project is funded by government funds.

Various previous studies have identified a number of main factors that cause project failure, including:

- **Project management that ineffective** , including planning that weak, lack of coordination between teams, and suboptimal supervision;
- **Quality source Power man (HR)** Which low, covers lack of technical skills, limited experience, and minimal workforce training;
- **Poor project quality** , reflecting non-compliance with technical specifications, selection material Which No appropriate, as well as weakness control quality during construction in progress.

These three factors are often interrelated and worsen project conditions if not managed properly. Good. By Because That, required something approach analytical Which capable identify the complex relationships between these variables and provide a comprehensive picture of their influence on the risk of project failure.

For answer need the, study This propose use **Structural Equation Modeling-Partial Least Squares (SEM-PLS)** method to test the causal relationship between latent variables that influence project failure, and **Importance Performance Map Analysis (IPMA)** For map variables key based on level interest and its performance. This combined approach is expected to provide findings that are not only theoretical but also applicable to support decision-making in the construction sector.

2 LITERATURE REVIEW

2.1. Source Power Man (HR) in Project Construction

Human resources (HR) play a key role in the success of a construction project. Factors such as technical skills, work experience, ongoing training, and leadership are important. become element important Which determine performance team project. Nguyen et al. (2020) and Subagio et al. (2022) identify that low competence power Work, lack of training, as well as recruitment system Ineffective HR management directly contributes to the increased risk of project failure. Good HR management not only increases work efficiency, but Also capable minimize error technical And increase compliance to quality standards .

2.2 Project Management.

Project management is a process that regulates all stages of project implementation, from planning, implementation, monitoring, to evaluation. Previous studies have emphasized the importance of aspect management Which covers management time, cost, quality, communication, and risk management. Kurniawan and Latief (2021) state that managerial failures, such as inadequate planning, weak coordination between parties, and inconsistent supervision, are the main causes of project delays and budget overruns. Therefore, effective project management is crucial for the smooth and successful implementation of construction projects.

2.3 Quality Project

Quality in construction projects relates to the extent to which work results meet technical specifications, safety standards, and stakeholder expectations. Adedokun et al. (2021) emphasized that poor construction quality often leads to additional costs, work delays, and even structural damage after project handover. Factors influencing quality include material selection, workforce expertise, on-site quality management, and the inspection and quality control systems implemented by the contractor or project supervisor.

2.4 Risks Failure Project

The risk of project failure is the possibility of conditions occurring that hinder the achievement of goals. objective project Good in aspect time, cost, and quality. According to Flyvbjerg et al. (2003), more than 30% of large projects in developing countries experience failure in the form of overruns. cost And delay. Factor risk Can nature internal (like HR And management) as well as external (such as regulations, weather, or force majeure). Management risk Which weak will increase the possibility that the project will not reach the specified target.

2.5 Model SEM-PLS in Study Construction

Structural Equation Modeling-Partial Least Squares (SEM-PLS) is a variance-based statistical method used to test the relationship between latent constructs. Method this is considered superior For study with model complex, amount sample limited, as well as distribution data abnormal . In the construction context, SEM-PLS allows researchers to evaluate the direct and indirect influences between variables such as human resources, project management, quality, and failure risk. SEM-PLS also facilitates the testing of mediating or moderating variables, resulting in a deeper understanding of the structure of the relationships between variables (Hair et al., 2013).

2.6 Importance Performance Folder Analysis (IPMA)

IPMA is an additional technique in SEM-PLS used to map the importance and performance of each construct or indicator in the model. IPMA not only shows the extent of influence a construct has on the dependent variable but also evaluates its performance score based on respondents' perceptions. This analysis is very useful in practice because it helps decision-makers identify priority strategic—namely aspect Which own big influence but performance is still low and needs to be improved (Ringle & Sarstedt, 2016). In the context of this research, IPMA is used to determine which areas should be focused on in project failure risk mitigation strategies.

2.7 Gaps Study (Research (Gap)

Although there are many studies that discuss the influence of individual factors such as human resources, project management, or quality on the success of construction projects, most of the research previously only analyze One or two factor in a way separated. Not yet Lots the study that integrate all over variables

the in One model structural Which comprehensive. In addition, there are still very few studies that utilize the combined SEM-PLS and IPMA approach to analyze risk project construction in a way empirical And applicable. By Because that, research This present For fill in gap the with build model analytical Which covers key variables and provides data-driven strategic priority mapping.

3 METHODS

3.1 Types And Design Study

This study uses a quantitative explanatory approach with a causality design to test the causal relationship between variables. The main objective is to analyze the influence of the Source of Power Man (X1), Management Project (X2), And Quality Project (X3) to Project Failure Risk (Y). This design allows researchers to obtain objective data, which can be tested in a way statistics, And relevant For development model predictive in field construction management .

3.2 Population And Sample Study

The population in this study was all construction professionals involved in building projects in the Tangerang area, including project managers, contractors, supervising consultants, and field implementers. The sampling technique used was **purposive sampling** , which selects respondents based on certain criteria:

- Own experience minimum 3 year in project construction building
- Once or currently handle project in region Tangerang
- Taking office in position managerial or technical

Amount respondents Which made into sample is **30 person** , in accordance with standard minimum SEM-PLS analysis for complex models (Hair et al., 2013).

3.3 Variables Study And Definition Operational

Study This involving four variables main:

- X1: Source Power Man (HR)

Indicator: technical competence, work experience, training, work motivation, and leadership

- X2: Management Project

Indicator: planning, coordination, supervision, management source Power, cost and time control

- X3: Quality Project

Indicator: compliance to specification technical, quality material, system control quality, final work results

- Y: Risk Failure Project

Indicator: delay project, swelling cost, work repeat, stakeholder dissatisfaction, and quality non-conformity

3.4 Technique Collection Data

Primary data obtained through **a questionnaire covered** with **Likert** scale **5 points** (1 = very don't agree until 5 = very agree). Questionnaire arranged based on indicator each variables And has been tested for validity and reliability through a pilot test. Charging is done automatically online and face to face.

3.5 Method Analysis Data

Data analyzed with two approach main:

- **Structural Equation Modeling Partial Least Squares (SEM-PLS)** using **SmartPLS 4.0 software** . SEM-PLS is used to:
  - Test validity And reliability construct (outer model)
  - Analyze connection causal between variables latent (inner model)
  - Count coefficient track, mark R2, And Q2
- **Importance Performance Folder Analysis (IPMA)** used For:
  - Evaluate level interest And performance each construct on the dependent variable (project failure risk)
  - Identifying area priority improvement in mitigation risk

3.6 Stages Study

1. Compilation instrument study (questionnaire)
2. Test validity And reliability beginning (pilot test)
3. Collection data main
4. Processing And analysis data use SmartPLS
5. Compilation IPMA And interpretation results
6. Withdrawal conclusion And recommendation

4. RESULTS AND DISCUSSION

4.1 Results Analysis SEM- PLS

Based on analysis SEM-PLS use device soft SmartPLS version 4.0, the following results were obtained:

4.1.1 Reliability Test Indicator

Based on reliability test results indicator through outer loadings value , all indicator in the research model show value above 0.70 , which means that indicators the own strong contribution in measure respective latent variables . By specifically , indicators on variables Human Resources (X1) has outer loadings ranging from between 0.823 to 0.884, which shows that all indicator in variables This consistent and reliable . The same thing valid For variables Management Project (X2), although outer loadings value is greater varies between 0.726 to 0.842, constant meet the recommended minimum limits For maintain indicator in the model

Hubungan Reflektif	Outer loadings	Keterangan
X1.1 <- Sumber Daya Manusia	0.874	Konsisten
X1.2 <- Sumber Daya Manusia	0.851	Konsisten
X1.3 <- Sumber Daya Manusia	0.884	Konsisten
X1.4 <- Sumber Daya Manusia	0.867	Konsisten
X1.5 <- Sumber Daya Manusia	0.823	Konsisten
X2.1 <- Manajemen Proyek	0.842	Konsisten
X2.2 <- Manajemen Proyek	0.752	Konsisten
X2.3 <- Manajemen Proyek	0.759	Konsisten
X2.4 <- Manajemen Proyek	0.749	Konsisten
X2.5 <- Manajemen Proyek	0.742	Konsisten
X2.6 <- Manajemen Proyek	0.726	Konsisten
X3.1 <- Kualitas Proyek	0.833	Konsisten
X3.2 <- Kualitas Proyek	0.876	Konsisten
X3.3 <- Kualitas Proyek	0.812	Konsisten
X3.4 <- Kualitas Proyek	0.764	Konsisten
X3.5 <- Kualitas Proyek	0.841	Konsisten
X3.6 <- Kualitas Proyek	0.750	Konsisten
Y1.1 <- Resiko Kegagalan Proyek	0.870	Konsisten
Y1.2 <- Resiko Kegagalan Proyek	0.653	Konsisten
Y1.3 <- Resiko Kegagalan Proyek	0.875	Konsisten
Y1.4 <- Resiko Kegagalan Proyek	0.718	Konsisten

Table 1. – Outer Loading Results

In a way overall , results This show that all over indicator in study This own good and consistent reliability in measure each latent variable . With Thus , the indicators the can maintained in the model for analysis more carry on without need existence elimination .

4.1.2 Internal Consistency Test

internal consistency test were measured through Composite Reliability value (rho_c) shows that all over latent variables in study This own excellent reliability . The composite reliability value for all variables is above 0.70, which is the recommended minimum limit in SEM-PLS analysis . In specific , variable Human Resources own mark rho_c highest (0.934), which indicates that indicators in variables this is very consistent in measure the concept in question . Variable Quality The project also shows level excellent reliability with value of 0.921, followed by Management Project (0.893) and Risk Failure Project (0.864), which is also located in category reliable and consistent .

Variabel Laten	Composite reliability (rho_c)	Keterangan
Kualitas Proyek	0.921	Konsisten
Manajemen Proyek	0.893	Konsisten
Resiko Kegagalan Proyek	0.864	Konsisten
Sumber Daya Manusia	0.934	Konsisten

Table 2. – CR Results

With results this , can concluded that all latent variables in the research model own high internal consistency , so that can used with reliable in analysis more carry on

4.1.3 Validity Test Convergent

Validity Test Results Measured convergence through Average Variance Extracted (AVE) value shows that all over latent variables in study This fulfil criteria validity good convergence . The AVE value obtained For every latent variables are above 0.50, which is the recommended minimum limit in SEM-PLS analysis . Variables Human Resources own the highest AVE value , namely 0.740, which indicates that indicators in variables This
capable explain part big existing variance , so that own level excellent validity . Quality The project also shows validity strong convergence with AVE value of 0.662, followed by Risk Failure Project (0.617) and Management Project (0.581), which is also located in category accurate . In overall , results This indicates that indicators in every latent variables are capable truly represent the concept you want measured .

Variabel Laten	Average variance extracted (AVE)	Keterangan
Kualitas Proyek	0.662	Akurat
Manajemen Proyek	0.581	Akurat
Resiko Kegagalan Proyek	0.617	Akurat
Sumber Daya Manusia	0.740	Akurat

Table 3. – AVE Results

With thus , it can it is said own validity good convergence , which means that every indicator in latent variables have high correlation and measuring the same aspect from the construction under study .

4.1.4 Validity Test Discriminant

Validity Test Results Measured discriminants use Heterotrait-Monotrait Ratio (HTMT) shows that all over partner latent variables in study This own HTML value is below 0.90, which is the recommended maximum limit in SEM-PLS analysis . This show that every latent variables in the model have significant difference One each other, so that can it is said that validity discriminant has fulfilled . Couple variables with highest HTMT value is Risk Failure Project and Management Project (0.816) and Human Resources and Risk Failure Project (0.804), however still is at within the limits that can be accepted . While that , couple with lowest HTMT value is Human Resources and Quality Project (0.306), which shows that second variables the own very clear difference in the model.

Hubungan Antar Variabel Laten	Heterotrait-monotrait ratio (HTMT)	Keterangan
Manajemen Proyek <-> Kualitas Proyek	0.515	Berbeda Signifikan
Resiko Kegagalan Proyek <-> Kualitas Proyek	0.661	Berbeda Signifikan
Resiko Kegagalan Proyek <-> Manajemen Proyek	0.816	Berbeda Signifikan
Sumber Daya Manusia <-> Kualitas Proyek	0.306	Berbeda Signifikan
Sumber Daya Manusia <-> Manajemen Proyek	0.560	Berbeda Signifikan
Sumber Daya Manusia <-> Resiko Kegagalan Proyek	0.804	Berbeda Signifikan

Table 4. – HTMT Results

which shows that second variables the own very clear difference in the model. In overall , results This indicates that every latent variables are truly represent different constructs , so that No happen overlapping overlap between latent variables can considered own validity good discriminant , which means that every latent variables measure unique and unusual aspects mixed with other variables .

4.1.5 Inner Model Collinearity Test

collinearity test on the inner model aims For detect whether there is high linear relationship between variables independent in the structural model . High collinearity can cause distortion in estimate coefficient connection between variables , so that reduce model validity . Measurement collinearity in SEM-PLS usually done with Variance Inflation Factor (VIF). Interpretation of Results:

- VIF < 5 → None worrying collinearity , the model is considered Good .
- VIF ≥ 5 → Indication collinearity high , which can cause bias in estimate connection between latent variables . If found high VIF value , it is necessary done elimination or modification indicator related .

Pengaruh Antar Variabel Laten	VIF	Keterangan
Kualitas Proyek → Resiko Kegagalan Proyek	**1.236**	Tidak Terdapat Gejala Kolinieritas
Manajemen Proyek → Kualitas Proyek	**1.321**	Tidak Terdapat Gejala Kolinieritas
Manajemen Proyek → Resiko Kegagalan Proyek	**1.511**	Tidak Terdapat Gejala Kolinieritas
Sumber Daya Manusia → Kualitas Proyek	**1.321**	Tidak Terdapat Gejala Kolinieritas
Sumber Daya Manusia → Manajemen Proyek	**1.000**	Tidak Terdapat Gejala Kolinieritas
Sumber Daya Manusia → Resiko Kegagalan Proyek	**1.328**	Tidak Terdapat Gejala Kolinieritas

Table 5. – VIF Results

Based on Inner VIF results , no There is problem Serious related multicollinearity in the model because all over VIF value is below the general limit of 5.0. The highest VIF value found in the relationship Management Project to Risk Failure Project amounting to 3,201, which is still is at within reasonable limits .

4.1.6 Significance Test Inner Model Relationship

Significance test results connection in the Inner Model shows How variables independent influence variables dependent in a way direct in the research model . Significance connection determined based on P-values, with a general limit of ≤ 0.05 indicating existence significant relationship . Based on results obtained , Human Resources own significant influence to Management Project (β = 0.493, P = 0.000) and Risk Failure Project (β = 0.444, P = 0.002).

Pengaruh Langsung	**Coefficient**	**P values**
Kualitas Proyek → Resiko Kegagalan Proyek	0.295	**0.043**
Manajemen Proyek → Kualitas Proyek	0.393	0.102
Manajemen Proyek → Resiko Kegagalan Proyek	0.324	**0.050**
Sumber Daya Manusia → Kualitas Proyek	0.079	0.745
Sumber Daya Manusia → Manajemen Proyek	0.493	**0.000**
Sumber Daya Manusia → Resiko Kegagalan Proyek	0.444	**0.002**

Table 6. – Influence Direct

This shows that the more Good management source Power humans , increasingly Good management projects undertaken , as well as the more low risk failure project . In addition , Management The project also has significant influence to Risk Failure Project (β = 0.324, P = 0.050), although The P value is at the threshold of significance . This is indicates that management more projects Good can reduce risk failure project , although the effect No too strong . Meanwhile that , Quality Project own significant influence to Risk Failure Project (β = 0.295, P = 0.043), which means the more tall quality project , increasingly low risk his failure . Rather , relationships Human Resources to Quality Project (β = 0.079, P = 0.745) and Management Project to Quality Project (β = 0.393, P = 0.102) does not significant because P-values > 0.05. This shows that in this model , the increase management projects and resources Power man No in a way direct impact on quality project in a way significant . In terms of overall , results This show that Human Resources and Management Project own influence important to Risk Failure Project , while variables Quality Project more play a role in lower risk failure project compared to influenced directly by factors other .

After influence directly , next come under influence No direct . The results of the influence No direct or more known with effect moderation

Pengaruh Tidak Langsung (Efek Moderasi)	Coefficient	P values
Manajemen Proyek → Kualitas Proyek → Resiko Kegagalan Proyek	0.116	0.230
Sumber Daya Manusia → Kualitas Proyek → Resiko Kegagalan Proyek	0.023	0.768
Sumber Daya Manusia → Manajemen Proyek → Kualitas Proyek → Resiko Kegagalan Proyek	0.057	0.267
Manajemen Proyek → Kualitas Proyek → Resiko Kegagalan Proyek	0.116	0.230
Sumber Daya Manusia → Manajemen Proyek → Resiko Kegagalan Proyek	0.160	0.133

Table 7. – Indirect Influence

Influence test results No direct or effect moderation in the Inner Model shows that No There is track significant moderation in study this . Significance determined based on P- values ≤ 0.05, whereas all over track influence No directly tested own P value > 0.05, indicating that effect mediation or tested moderation No significant . Management Path Project → Quality Project → Risk Failure Project own coefficient of 0.116 with P = 0.230, which means that although Management Project can influence Risk Failure Project through Quality Projects , their effects No Enough strong For considered significant . The same thing happened on the track Human Resources → Quality Project → Risk Failure Project , where the coefficient is very small (0.023) with P = 0.768, shows that Quality Project is not an effective mediator between Human Resources and Risk Failure Project . In addition , the path Human Resources → Management Project → Quality Project → Risk Failure Project own coefficient of 0.057 with P = 0.267, which is also not significant . This means that the effect No direct from
Human Resources to Risk Failure Project through track tiered This No own sufficient impact strong For taken into account in the model. Finally , the path Human Resources → Management Project → Risk Failure Project own coefficient 0.160 with P = 0.133, which although A little more tall compared to another path , still No reach level the required significance . In overall , results This show that in this model , the effect No direct or tested moderation No own influence significant . This means that the relationship between variables more dominated by effects direct compared to with effect No directly mediated by other variables .

4.1.7 Assessing Strength Explaining the Model

The R-squared (R2) results show how much big variables independent in the model can explain variables dependent . The more tall R2 value , the more big model capabilities in explain observed variables . The R2 value for Quality Project of 0.191 indicates that variables independent influencing Quality Project only capable explains 19.1% of variability , while the other 80.9% explained by other factors outside the model. This value classified as low , which indicates that other factors that are not including in the contributing model more big to variables Quality Project . Temporary that , R2 for Management Project of 0.243 indicates that the model is capable explains 24.3% of variability Management Project , while 75.7% is influenced by other variables that are not entered in the model. This value is also classified as low until moderate , showing that There is factor more external dominant in determine Management Project . On the other hand , R2 for Risk Failure Project reached 0.684, which means that 68.4% of variability Risk Failure Project can explained by variables in the model, while 31.6% is influenced by other factors

Variabel Laten	R^2
Kualitas Proyek	0.191
Manajemen Proyek	0.243
Resiko Kegagalan Proyek	0.684

Table 8. – R2 Results

the model has ability good predictive in explain factors that influence Risk Failure Project . In Overall , this model more strong in explain variability Risk Failure Project . In Overall , this model more strong in explain variability Risk Failure Projects compared with Quality Project and Management The project , which is still own influence from factor sufficient external big

4.1.8 Assessing Strength Model Prediction

Based on Construct Cross-Validated Redundancy (Q2 Redundancy) results , the ability model predictions against latent variables vary . Risk Failure Project has a Q2 of 0.376, which indicates that the model has ability strong prediction in explain variables this . Meanwhile that , Quality Project and Management Project own Q2 values of 0.110 and 0.129 respectively, which are included in category ability prediction weak . This is indicates that variables This only A little can explained by other constructs in the model. In overall , although the model shows strong prediction to Risk Failure Projects , capabilities prediction to variables other need evaluated more continue , for example with consider variables other additions that can be recommended For study forward For increase accuracy model prediction .

Nilai Q^2 Redundancy	Interpretasi Kemampuan Prediksi
$Q^2 > 0.35$	Kemampuan prediksi kuat
$0.15 < Q^2 \leq 0.35$	Kemampuan prediksi moderat
$0.00 < Q^2 \leq 0.15$	Kemampuan prediksi lemah
$Q^2 \leq 0.00$	Tidak memiliki kemampuan prediksi

Table 9. – Q2 Cut-off

Variabel Laten	Q^2
Kualitas Proyek	0.110
Manajemen Proyek	0.129
Resiko Kegagalan Proyek	0.376

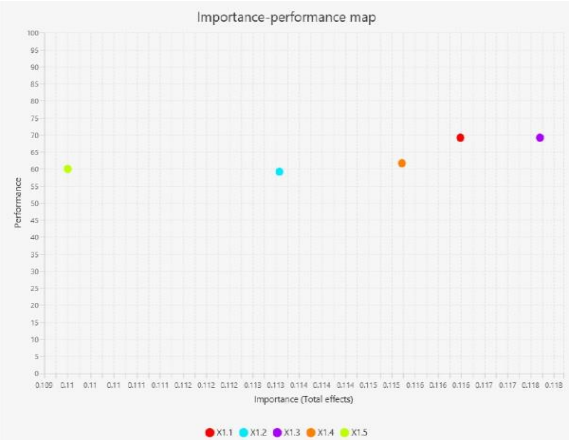
Table 10. – Q2 Results

4.2 Importance Performance Map Analysis

IPMA used For identify variables with influence most important to project risks, as well as evaluate the actual level of performance based on respondents' perceptions.

4.2.1 Management Project

- Importance: tall (mark influence highest to risk)
- Performance: relatively low
- Interpretation: although management project very influential, its performance is still low. Therefore, it needs to be a top priority for improvement.



Based on the total effect, the indicators that have influence the biggest to Management Project is Skills and Competencies (X1.3) with value of 0.118, followed by Education (X1.1) with value 0.116, and Discipline (X1.4) with value 0.115. This shows that the more tall skills and competencies possessed by the workforce work , more and more good management too projects that can applied . Education also has role important in increase quality management project , because power Work with background behind more education Good tend own greater understanding Good about management project . Meanwhile that , discipline show significant contribution to effectiveness management project , which means that compliance to procedures and schedules influential direct to success project .

4.2.2 Quality Project

Based on the total effect, the indicators that have influence the biggest to Quality Project is Coordination and Communication (X2.1) with value 0.095. This shows 52

that effective communication in team very important project For increase quality project in a way overall . Next , Scheduling Project (X2.2) and Planning Project (X2.3) also has enough influence large , with a total effect of 0.085 each
and 0.086. This is confirm that good planning and scheduling contribute significant in ensure that project walk in accordance standard expected quality . Indicators Control Risk (X2.6) has the lowest total effect among variables management project with value 0.082, however still play a role in support quality project .

From the side performance , indicators with performance highest are Education (X1.1) and Skills and Competence (X1.3) with value 69.167. This shows that aspect source Power man related education and skills Already Enough Good in support quality project . On the other hand , the indicator with performance lowest is Coordination and Communication (X2.1) with value of 57,500, which is actually has the highest total effect . This means that even though communication own impact big to quality project , its implementation Still need improved . Similar things occurs in Experience (X1.2) with performance of 59,167, which has influence Enough important but Still less than optimal in practice .

4.2.3 Sources Power Man

- Importance: Enough important
- Performance: highest in between all three
- Interpretation: although its influence is lower than the other two factors, HR performance is relatively adequate, but still requires training and strengthening of talent management.

This finding strengthens previous research (Nguyen et al., 2020; Subagio et al., 2022) which stated that HR quality is base success project. Competence E f f e c t i v e technical, training, and leadership reduce errors in the field and support smooth project implementation.

6 CONCLUSION

Study This aim For identify And analyze factors Which influence the risk of failure of building construction projects in Tangerang using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) and Importance Performance Map Analysis (IPMA) approaches. Based on the results of processing and analysis
data, several important conclusions were obtained
as follows:

1. Human Resources (HR) have a significant influence on the risk of failure project, Good in a way direct and through influence No direct Which mediated
by project management and project quality. This shows that improving competency, training, and the effectiveness of human resource management plays a significant role in reducing the risk of project failure.
2. Management Project proven as variables mediation Which strong. Management project the good one No only influenced by quality HR, but Also play a role in improve project quality and reduce the risk of failure. Management effectiveness in planning, control, as well as coordination project proven become determinant success of building construction projects.

3. Quality Project play a role direct in lower risk failure, specifically in terms of technical and operational. Quality of work Which tall, compliance to technical specifications , And supervision Which strict become an element important Which must prioritized to prevent project failure.
4. Based on IPMA results, found that although aspect project management have a level interest (importance) Which tall to decline risk failure project, its performance (performance) Still classified as low. With thus, improvement Project management performance is a top priority in risk mitigation strategies.
5. Overall, the model built in this study shows a positive relationship. strong And significant between variables. Findings This give base empirical Which solid for
the development of more effective and measurable project management
strategies in the context of building construction in urban areas such as Tangerang.

6.2 Limitations

This study focuses solely on building construction projects in Tangerang, using SEM, PLS, and IPMA analysis methods. Data were obtained from questionnaires of project respondents in the region, so the results are only applicable to the geographic context and variables studied.

6.3 Future Research

Further research is recommended to expand the geographical scope so that it is not only limited to the Tangerang area, so that the results obtained can be more representative for various conditions.
other regions. Furthermore, it is necessary to incorporate external variables not discussed in depth in this study, such as the influence of weather conditions, government regulations, and increasingly dynamic developments in construction technology. A more varied analysis method can also be used to test the validity and reliability of the proposed model, for example by combining quantitative and qualitative approaches. Future research is also encouraged to account for risk dynamics that can change over time by using longitudinal data or long-term case studies. This aims to obtain a more comprehensive and realistic picture of managing the risk of construction project failure, thereby providing more adaptive and effective managerial recommendations .

Thank-you note

We would like to thank the Tangerang City Government, South Tangerang City Government, and all respondents who took the time to complete the questionnaire, ensuring the successful completion of this research. We hope the results of this study are useful and can contribute positively to the development of knowledge and practice in construction project management.

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