United International Journal for Research & Technology
Volume 06, Issue 08, 2025 | Open Access | ISSN: 2582-6832

Evaluation of Construction Contract Administration at the Ministry of Public Works related to Risks Based on LKPP Regulation No. 12/2021 and FIDIC Red Book to Avoid Claims

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***Abstract*—** This study aims to evaluate the construction contract administration system at the Ministry of PUPR by integrating LKPP Regulation No. 12/2021 and the FIDIC Red Book to prevent contract claims. With a quantitative approach and expert validation, the study identifies three key stages in contract management: preparation, execution, and completion. The results of the analysis show that the integration of these two systems results in 23 administrative activities that are mostly aligned, although there is still a need for adjustments in the recording of technical instructions and risk documentation. There were 15 administrative risks identified, with three dominant risks—turnover of officers, disorderly documentation, and poor monitoring—having the most influence on the occurrence of claims. Regression analysis showed a significant relationship between administrative inefficiencies and increased project claims. Therefore, it is recommended to strengthen the information technology-based administrative system and align regulations with international standards to increase accountability and reduce contractual conflicts.

***Keywords*—** Contract administration, FIDIC Red Book, LKPP 12/2021

I. INTRODUCTION

Construction contract administration is a fundamental component in the implementation of infrastructure projects that require systematic and comprehensive management from the need identification phase to contract termination. The complexity of construction contract management includes two main dimensions that must run synergistically: technical implementation of construction and contractual administration. The technical dimension includes structural construction activities, material procurement, and construction system installation, while the administrative dimension includes the management of non-technical aspects such as progress reporting, payment management, issuance of change instructions, and handling of claims and contractual disputes.

The phenomenon that occurs in practice shows that the contract administration aspect is often not given adequate priority compared to the technical aspects of the field. This imbalance of attention is a catalyst for the emergence of various problems in the execution of construction contracts, including delays in schedules, deviations in specifications, escalation of costs, and increased potential conflicts between parties. The effectiveness of contract management does not only depend on the physical dimension of the work, but also on the quality of contract administration that is carried out in an orderly, documented manner, and in accordance with the applicable regulatory framework [1].

Contract administration, as conceptualized by Gilbreath, is a series of processes of managing the commercial and administrative aspects of a construction contract that take place from initiation to termination of a contract, including in the condition of premature termination of the contract [2]. It was identified that the failure of the service provider to understand and comply with contractual procedures may lead to the denial of claims due to non-compliance with contractual provisions [3]. Similarly, service users who do not understand their administrative obligations can be a source of obstacles to project implementation, resulting in delays, quality degradation, and cost overruns due to claims that could actually be avoided.

The Ministry of Public Works (PU), as an institution that has the mandate to implement national infrastructure development, manages thousands of construction work packages every year. In this context, contract management plays a vital role as a legal and managerial instrument in regulating the working relationship between the government and construction service providers. However, based on the findings of monitoring and evaluation by the Directorate General of

Construction Development of the Ministry of Public Works and Public Works, there are recurring problems in the contract management cycle, especially in the aspect of contractual administration.

The cumulative impact of this administrative disorder has resulted in an increase in the number of claims and contractual disputes within the Ministry of Public Works. Monitoring and evaluation data show an increasing trend of cases submitted to dispute resolution forums, either through mediation, arbitration, or court. Most claims cannot be adequately verified due to weak documentation [4]. These findings are in line with Fisk's statement that failure to keep contract documents in an orderly and accurate manner is the main cause of the ineffectiveness of the contractual performance evaluation process [5].

Other systemic problems include weak human resources and institutional integrity. Many project administration officers are placed not based on competence, but due to personnel limitations, so that administrative work is carried out suboptimally. Low appreciation for the role of contract administration in project organization, where administrative officers are considered to be a mere supporting position and not a strategic part of project management, results in low priority for administrative work, incomplete documentation, and systematically undocumented information.

The importance of a contract administration management system in construction projects can be seen from several fundamental aspects. First, as a guarantor of compliance with the terms of the contract, the contract administration functions to ensure that all responsibilities and obligations are carried out based on contractual regulations. [6]emphasizing that construction contracts are not only legal documents, but also daily operational guidelines in the field [7][8].

Monitoring and evaluation of the implementation of construction contracts is an important instrument carried out by the Directorate General of Construction Development of the Ministry of Public Works to assess the effectiveness of the implementation of the construction service procurement policy. According to [9], the evaluation not only aims to find out the extent to which the problem has been addressed, but also provides clarification of policy values and feedback for problem reformulation. [10]Differentiating monitoring as continuous supervision of ongoing activities, while evaluation is an analysis of programs that have been running for at least three months to assess their effectiveness and impact.

Previous research has examined various aspects of construction contract administration with diverse focuses. Identification of mismanagement of government construction contracts from internal and external factors [11]..

Based on these conditions, this study aims to develop a construction contract administration evaluation framework that integrates LKPP Regulation No. 12 of 2021 and the FIDIC Red Book to identify risk factors that have the potential to cause claims and formulate effective mitigation strategies. The integration of these two regulatory frameworks is expected to provide a comprehensive perspective in the management of construction contract administration in accordance with national and international standards, so as to minimize the risk of claims and increase the effectiveness of the implementation of infrastructure projects in the Ministry of Public Works.

II. LITERATURE REVIEW

A. Contract Administration

Contract administration is the process of managing the commercial and legal aspects of a construction contract that takes place from signing to completion of the contract. The function of contract administration not only includes routine administrative activities, but also ensures that the rights and obligations of both parties—service users and service providers—are carried out in accordance with the terms of the contract. This is important because effective contract administration can mitigate potential risks during the execution of a construction project [1], [2]. The administration of construction contracts is an important part of the administration of construction projects, which aims to ensure the commercial success of the project. This includes not only the completion of physical work, but also the fulfillment of the rights of service providers administratively and financially.

B. Construction Contract Standards at the Ministry of Public Works

Construction Contract Standards in the Ministry of Public Works The construction contract standards in the Ministry of Public Works refer to the types of contracts used in infrastructure development projects, which are classified based on the form of reward, the duration of implementation, and the type of work. Construction contracts are grouped into several main types, including

lumpsum contracts, unit price contracts, combination contracts, turn key contracts, and design and build contracts [13]. Each type has its own characteristics and risks that must be understood in depth by all parties involved in the contract. Lumpsum contracts provide a fixed value for the entire work, so the risk is fully borne by the contractor. While unit price contracts use a payment mechanism based on the actual volume of work at a fixed unit price, making them more flexible in projects with a lot of uncertainty. The combination of these two models is often applied in large projects involving different types of work. Turnkey and design and build contracts require service providers to complete projects from planning to implementation thoroughly.

C. FIDIC Red Book

FIDIC Red Book FIDIC Red Book is an international standard in the preparation of construction contracts that are widely used in large infrastructure projects. This contract is suitable for projects whose design is prepared by the project owner, where the contractor is in charge of carrying out construction work according to the design that has been set. One of the advantages of the Red Book is the clarity of the role of the engineer as an independent third party in charge of providing technical instructions and monitoring the implementation of the project [14]. The FIDIC Red Book consists of several stages of contract administration which include: (1) pre-execution of the contract, such as the appointment of contractors and engineers, as well as the submission of execution guarantees; (2) the initial implementation of the project, including the issuance of a Notice to Commence and mobilization; (3) the execution of the contract, which includes the provision of instructions, progress reporting, and interim payment; (4) claims and risk management; (5) completion of the work, including the Taking-Over Certificate and the Final Completion Certificate; and (6) contract closure.

D. Risks in Contract Administration Management

The management of construction contract administration is inseparable from various risks that can hinder the implementation of projects. These risks can be grouped into several categories, namely: human and organizational risks, document and procedure risks, scheduling and reporting risks, and monitoring, evaluation, and technology risks [16], [17]. HR and organizational risks include limited workforce numbers and competencies, weak organizational structures, and lack of training for key project personnel. Unpreparedness in terms of project management often leads to miscommunication, documentation errors, and inaccuracies in reporting [1], [18]. In addition, personnel turnover and the absence of a clear administrative structure can magnify contractual risks.

E. Construction Claims

Construction claims are claims filed by service providers due to losses or inconsistencies in the implementation of the project. Claims generally relate to additional costs, extended time, or compensation for job changes. In Indonesia, many construction contracts do not explicitly contain claim clauses, making claims a potential source of conflict [1]. Types of construction claims include cost and time incremental claims, overhead cost claims, extended time claims at no additional cost, and other compensation claims. Moreover [24]Classify claims into claims resulting from contract changes, additional value elements, changes in work methods, and project suspensions. These claims arise as a result of design modifications, late payments, or non-conformities in project specifications.

Factors that cause claims include project uncertainty, weakness of contract documents, and opportunistic behavior from related parties [5], [25]. From the side of the project owner, claims arise due to unclear contracts, unrealistic scheduling, late payments, and frequent design changes. From the contractor's side, claims arise due to lack of experience, misinterpretation of documents, and ineffective project management. Claims can be resolved through negotiation, mediation, arbitration, litigation, mini trial, or dispute review board [26], [27]. Each method has its own characteristics in terms of cost, time, and level of legal entangling. Therefore, the selection of a claim settlement method must be adjusted to the complexity and urgency of the dispute that occurs.

Hypothesis Referring to the previous explanation, the hypotheses formulated to answer the formulation of the problem in this study are as follows:

- H1: The risk in the Document and Contract Understanding affects the occurrence of claims.
- H2: Structural and Administrative Resources Risk affects claims.
- H3: Process Risk and Contract Implementation Documentation affect claims
- H4: Risk of Non-Conformity and Evaluation of Implementation Affect Claims
- H5: Information and Communication System Risk affects claims

Thus, an in-depth study of construction claims is an important part of the preparation of an effective contract management strategy. The implementation of good risk management and a robust documentation system will minimize the chances of claims arising and support the smooth implementation of construction projects.

III. METHODS

This study adopts a quantitative approach with a mixed research strategy that combines archival analysis, surveys, and case studies according to the framework developed by [28]. The selection of the research strategy is based on the characteristics of the research questions that are exploratory and descriptive, with a focus on contemporary phenomena in the administration of government construction contracts. This approach allows for an in-depth investigation of the stages of contract administration based on LKPP Regulation No. 12/2021 and the FIDIC Red Book, identification of risk factors that affect the occurrence of claims, and the formulation of strategies to increase the effectiveness of construction contract administration.

The research variables consist of bound variables in the form of construction claims (Y), as well as independent variables that include the stages of contract administration starting from preparation, implementation, to contract settlement (X1-X7). The free variable was developed through a systematic integration between the provisions of LKPP Regulation No. 12/2021 and the FIDIC Red Book principles, resulting in 16 specific activities in the contract preparation and execution stages (X1.1-X3.3). Risk factors were identified based on the categorization of HR & Organization, Documents & Procedures, Scheduling & Reporting, and Monitoring, Evaluation & Technology, with reference to research [17], [16].

The research instrument was designed in the form of a structured questionnaire using a 5-point Likert scale following conceptualization [29]. The measurement of the probability of risk events uses gradations from "Very Low" (1) to "Very High" (5), while the impact of risk is measured from "Very Small" (1) to "Very Large" (5). The instrument development stage follows a systematic procedure starting from variable identification, sub-variable elaboration, indicator determination, descriptor formulation, to formulation of instrument items with comprehensive filling instructions.

Data analysis uses a gradual approach with appropriate statistical methods for each research question. To identify the stages of contract administration, the Delphi method follows conceptualization [31]To obtain expert consensus, followed by scoring analysis to quantify the validation results. The integration of the contract administration stages between LKPP Regulation No. 12/2021 and the FIDIC Red Book was carried out through comparative analysis to strengthen the effectiveness of contract management by adding elements of written notifications, technical instructions, and a more structured claims assessment process.

The adequacy of the data was evaluated using Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity according to the criteria [32], with an SME value of at least 0.60 for adequate factor analysis. The homogeneity test used the Mann-Whitney U Test for two categories and the Kruskal-Wallis Test for more than two demographic categories of respondents. The validity of the instrument was tested using the Pearson Product Moment with the formula:

$$r = \frac{N(\sum XY) - (\sum X.\sum Y)}{\sqrt{[N.\sum X^2 - (\sum X)^2].[N.\sum Y^2 - (\sum Y)^2]}}$$

Di mana:

N : Jumlah responden

X : Nilai dari responden untuk masing-masing indikator

Y : Nilai total dari seluruh indikator untuk setiap responden

Where the validity criteria are determined if the calculation > rtable at a significance level of 5%. The reliability of the instrument was evaluated using Cronbach's Alpha with a standard value of ≥ 0.6 for acceptable reliability according to [33]. Risk assessment refers to the Regulation of the Minister of PUPR No. 11 of 2024 with a quantitative formula: Risk Value = Likelihood Level × Impact Level. The risk level classification consists of Low (1-5), Medium (6-12), High (13-20), and Very High (21-25). Correlation analysis uses de Vaus interpretation with categorization of relationship strength from weak (<0.29) to near perfect (0.9-1.0). The influence of risk factors on claims was analyzed using Linear Regression Analysis with the equation:

$$Y=a+bX+e$$

With:

- Y = Claim
- a = Regression constant
- b = Regression coefficient of each risk factor
- X= Contract administration risk variable
- E= error or residual

This analysis is important to be carried out so that the dominant risk factors can be identified as the cause of claims, as well as the basis for improving the government contract administration system so that it is more accountable, adaptive, and has minimal disputes.

Where Y represents a claim, a is the regression constant, b is the regression coefficient of the risk factor, X is the variable of the risk of contract administration, and e is the error or residual. The analysis generated an R^2 value to measure the contribution of independent variables in explaining the variation in claims, an ANOVA test for the simultaneous significance of the model, and a regression coefficient for the partial significance of each risk factor. The final stage involves expert validation to formulate strategies responsive to dominant risk factors, resulting in recommendations for improving an accountable, adaptive, and minimally disputed contract administration system in the context of integrating national regulations with international standards.

IV. RESULTS

A. Contract Administration Stage Validation Data (RQ 1)

The process of validating the stages of construction contract administration began with the distribution of the first stage of questionnaires to five experts consisting of practitioners and academics. The experts have relevant professional and academic qualifications, as well as more than 15 years of experience in the field of procurement and administration of construction contracts. This validation aims to answer Research Question (RQ) 1 regarding the suitability of contract administration stages in LKPP Regulation No. 12 of 2021 and the FIDIC Red Book.

Table 1. *Expert Profile of the First Level Questionnaire*

Respondent	Position	Agency	Work Experience (Years)	Final Education
P1	Director	Ministry of Public Works	19 Years	S2
P2	Associate Legal Analyst	Ministry of Public Works	15 Years	S2
P3	Associate Expert in Construction Services Supervisor	Ministry of Public Works	17 Years	S2
P4	Main Expert of Construction Services Builders	Ministry of Public Works	36 Years	S3
P5	Contract Law Practitioner	Independent	45 Years	S2

Source: Author's Processing (2025)

The results of the recapitulation show that of the eight stages submitted, only three were declared valid by all experts, namely the Stages of Contract Preparation, Contract Implementation, and Contract Settlement. Other stages, such as Contract Performance Administration or Claims and Risk Management, are not approved because they are considered part of the main stage or have overlapping terminology.

The rejection of these stages is also based on the substance of Perlem LKPP No. 12/2021 which does not explicitly regulate these phases as separate administrative stages. For example, activities in the Pre-Execution of the Contract have been covered in the Contract Preparation in accordance with articles 21-22 of the LKPP Regulation. This is reinforced by the argument that separating these activities will only lead to duplication and unclarity of administrative flows.

Furthermore, the stage of Contract Implementation Administration is not known as a phase in the LKPP Regulation. The activity has been included in the Contract Implementation. Likewise, Claims and Risk Management is more functional and cross-staged. Based on these results, three main stages in contract administration that are recognized as valid are determined, namely: (1) Contract Preparation, (2) Contract Execution, and (3) Contract Completion.

B. Integration of LKPP and FIDIC Contract Administration Activities (RQ 2)

To answer Research Question 2, further validation was carried out through the second stage of the questionnaire with the aim of integrating activities at each stage of the contract in LKPP Regulation No. 12/2021 and the FIDIC Red Book. Five experts were again involved with an emphasis on the integration of administrative substance between national regulations and international practice.

Table 2. Results of the Recapitulation of Stages and Contract Administration activities based on LKPP Regulation No. 12/2021 and the integrated FIDIC Red Book

Contract Administration Process	Code	Activity/ LKPP Indicator	FIDIC Red Book Activity Equivalents
Stages of Contract Preparation	X1.1	Issuance of Letter of Appointment of Goods/Services Provider (SPPBJ)	Officially appointing a service provider
	X1.2	Implementation of Contract Signing Preparation Meeting	Clarify and negotiate the content of the contract
	X1.3	Drafting and Signing of Contract Documents	Drafting and signing complete contract documents
	X1.4	Project Implementation Personnel Assignment	Assign an implementation team such as project managers and field engineers
	X1.5	Delivery of Implementation Guarantee	Hand over the guarantee of performance to the employer
Stages of Contract Execution	X2.1	Handover of Work Sites to Service Providers	Hand over the work area to the provider to start work
	X2.3	Issuance of Work Orders (SPMK)	Giving an official order to start work
	X2.4	Implementation of Pre-Construction Meeting (PCM)	Hold an initial meeting to coordinate implementation in the field
	X2.5	Job Advance Payment	Make advance payments according to the terms of the contract
	X2.6	Mobilization of Labor and Equipment	Delivering labor and Equipment to the project site
	X2.7	Implementation of Initial Mutual Check (MC-0)	Perform preliminary measurements Together to match field conditions
	X2.8	Payment Implementation Based on Job Performance	Apply for and receive payments based on work progress
	X2.9	Preparation and Submission of Periodic Work Results Reports	Compile and submit progress reports on a regular basis
	X2.10	Drafting and Signing of Contract Addendum	Make contract changes as needed and approved
	X2.11	Handling of Force Majeure	Managing the impact of extraordinary events on projects
	X2.12	Termination of Contract	Terminating the contract on lawful grounds and procedures
	X2.13	Dispute Resolution or Contract Conflict	Resolving contractual disputes through agreed procedures
	X2.14	Recording and Reporting of PPK Technical Instructions	Formally Recording Field Instructions
	X2.15	Contract Performance Documentation	Compiling Contract Administrative Reports Periodically
	X2.16	Dispute Handling and Contract Claims	Formally Documenting Claims and Objections
	X2.17	Contract Risk Identification and Mitigation	Mapping Risks and Formulating Mitigation Actions
	X2.18	Contract Implementation Coordination and Evaluation Meeting	Conducting Regular Contract Evaluation Meetings
Stages of Contract Completion	X3.1	Implementation of the First Handover of Work (Provisional Hand Over / PHO)	To make an initial submission of work results to the employer

	X3.2	Final Hand Over (FHO)	Perform final handover after the maintenance period is completed
	X3.3	Fulfillment of Retention Guarantee Obligations	Submit the retention guarantee after all obligations have been fulfilled

Source: Author's Processing (2025)

The validation results show that all activities developed and linked between LKPP and FIDIC are approved by all experts. Activities such as the issuance of SPPBJ, signing contract documents, handling force majeure, and preparing work reports are considered appropriate and complementary between the two. An in-depth analysis of this validation shows that the contract administration system under the LKPP Regulation has covered the majority of important processes in the management of construction contracts. However, the FIDIC Red Book adds value to the aspects of documentation, change management, and formal communication, which have not been explicitly regulated in the national system.

As a result of the integration, six additional activities developed from the FIDIC principles into the LKPP contract administration system were obtained, namely: recording of formal field instructions, preparation of periodic administrative reports, documentation of claims, risk mapping, contract evaluation meetings, and evaluation of contract changes (addendum). The tables and data of these additional activities were obtained through the validation of a questionnaire of experts, and the results were approved with an emphasis that the activities improve transparency and accountability of contract administration.

C. Identification of Contract Administration Risks (RQ 3)

Answering RQ 3, the study identified the main risks in the implementation of contract administration based on the LKPP and FIDIC Regulations. Data collection was carried out through the third stage of questionnaires to five experts with validation of risk lists taken from literature studies and field observations.

Table 3. *Impact Analysis to Answer RQ 3*

Code	Contract Administration Process	Code	Risk	Risk Categories	Reference	Risk Level
R1	Stages of Contract Preparation	R1.1	Low communication and management skills in the project team	HR & Organization	Widodo (2015), Amoah & Nkosazana (2023)	High
		R1.2	Limited manpower and resources in the implementation of contract planning	HR & Organization	Masuin et al. (2020), Tindiwensi et al. (2014)	High
		R1.3	Absence of an integrated contract administration organization in the project structure	HR & Organization	PMI (2017), Amoah & Nkosazana (2023)	High
		R1.4	Inconsistencies in technical specifications in contract documents	Documents & Procedures	FIDIC (2017), Perlem LKPP No. 12/2021	High
		R1.5	Errors in the management of packaging information and contract scheduling	Scheduling & Reporting	Alaghbari et al. (2007), Kaming et al. (1997)	High
R2	Stages of Contract Execution	R2.1	Turnover of administrative officers that interfere with the continuity of contract management	HR & Organization	Doloi (2013), Amoah & Pretorius (2020)	High

		R2.2	Lack of integrity or professional ethics of contract administration officers	HR & Organization	Kami, et al. (1997), Widodo (2015)	High
		R2.3	Irregularities in recording commands or instructions	Documents & Procedures	FIDIC (2017), Suhardjono (2018)	High
		R2.4	The scope of work submitted to the implementation team is not in accordance with the contract	Documents & Procedures	Perlem LKPP No. 12/2021, Hansen (2015)	High
		R2.5	The project implementation schedule is not in accordance with the initial planning	Scheduling & Reporting	Odeh & Battaineh (2002), Assaf & Al-Hejji (2006)	High
		R2.6	Delay in submission of work progress reports from providers	Scheduling & Reporting	Perlem LKPP No. 12/2021, Suhardjono (2018)	High
		R2.7	Weak monitoring system in contract execution	Monitoring, Evaluation & Technology	Amoah & Pretorius (2020), PMI (2017)	High
		R2.8	The use of technology in contract management has not been optimal	Monitoring, Evaluation & Technology	Amoah & Nkosazana (2023), Suhardjono (2018), PMI (2017)	High
R3	Stages of Contract Completion	R3.1	Delay in the implementation of job handover	Scheduling & Reporting	Hansen (2015), Perlem LKPP No. 12/2021	High
		R3.2	Evaluation of service provider performance is not carried out regularly and objectively	Monitoring, Evaluation & Technology	Perlem LKPP No. 12/2021, Widodo (2015)	High

Source: Author's Processing (2025)

From this process, 15 risks were identified which were categorized into three main stages: Preparation, Execution, and Contract Completion. These risks include low communication skills in the team, change of administrative officers, and late job handovers. All risks are validated by the majority of experts and are considered to have a direct impact on the quality of contract management. The analysis of each risk is carried out based on references from the FIDIC clause and the articles in the LKPP Regulation. For example, the risk of irregularity in the recording of instructions is in line with FIDIC Sub-Clause 3.3, while the risk of weak monitoring systems is associated with Article 65 of the LKPP Regulation No. 12/2021. After the impact analysis was conducted, a factor analysis was carried out using SPSS The results are as follows.

Table 4. *Variable Factor Group X*

Variable X	Risk Categories	Factor 1	Factor 2	Factor 3
Low communication and management skills in the project team	HR & Organization	√		
Limited manpower and resources in the implementation of contract planning	HR & Organization	√		
Absence of an integrated contract administration organization in the project structure	HR & Organization	√		
Inconsistencies in technical specifications in contract documents	Documents & Procedures		√	

Errors in the management of packaging information and contract scheduling	Scheduling & Reporting			√
Turnover of administrative officers that interfere with the continuity of contract management	HR & Organization	√		
Lack of integrity or professional ethics of contract administration officers	HR & Organization	√		
Irregularities in recording commands or instructions	Documents & Procedures		√	
The scope of work submitted to the implementation team is not in accordance with the contract	Documents & Procedures			√
The project implementation schedule is not in accordance with the initial planning	Scheduling & Reporting			√
Delay in submission of work progress reports from providers	Scheduling & Reporting		√	
Weak monitoring system in contract execution	Monitoring, Evaluation & Technology			√
The use of technology in contract management has not been optimal	Monitoring, Evaluation & Technology	√		
Delay in the implementation of job handover	Scheduling & Reporting	√		
Evaluation of service provider performance is not carried out regularly and objectively	Monitoring, Evaluation & Technology	√		

Based on the results of factor analysis, three main factors were obtained that met Kaiser's criteria with an eigenvalue above 1 and were able to explain 64.34% of the total variation in the data. This suggests that these three factors can represent most of the information contained in the initial fifteen variables. The rotation process results in a more balanced distribution of variance between factors, so that each factor has a substantial contribution and can be interpreted more clearly in the context of the study. Next, a correlation test was carried out for these three factors.

***Table 5.** Correlations*

Variable X'	Correlation value r	Significance	Interpretation
Factor 1	0,237	0,113	Weak positive correlation, insignificantStrong
Factor 2	0,334	0.050	Moderate, significant positive correlation (p < 0.05Strong
Factor 3	-0,089	0,610	Negative correlation is very weak, insignificant

Source: Author's Processing (2025)

The results of Spearman's correlation analysis showed that only Factor 2 had a positive and significant relationship with the Claim variable (ρ = 0.334; p = 0.050), meaning that an increase in the Factor 2 score tended to increase the potential claim. Factors 1 and 3 do not show a significant relationship, so they do not contribute significantly to the claim.

Next, regression analysis was carried out to evaluate the relative of one independent variable to the dependent variable in one model.

***Table 6.** Anova*

NEW ERA						
Type		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.583	1	3.583	9.888	.004b
	Residual	11.959	33	.362		
	Total	15.543	34			

Source: Author's Processing (2025)

Table 7. Model Summary

Model Summary				
Type	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.480a	.231	.207	.602

Source: Author's Processing (2025)

Table 8. Coefficients and claims

Coefficient						
Type		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
1		B	Std. Error	Beta		
	(Constant)	4.314	.102		42.398	.000
	Factor 2	.325	.103	.480	3.144	.004
a Dependent Variable: Claim						

Source: Author's Processing (2025)

The results of a simple linear regression analysis showed that Factor 2, namely risks related to contract documents, procedures, as well as project scheduling and reporting, had a positive and significant influence on the occurrence of project claims. This is shown by a significance value of 0.004 which is below the threshold of 0.05, so the regression model is statistically feasible. A regression coefficient value of 0.325 indicates that every one unit increase in the score on Factor 2 will increase the claim by 0.325 units. With an R-value of 0.480, the relationship between independent and dependent variables is in the medium category, while an R^2 value of 0.231 indicates that about 23.1% of the variation in claims can be explained by these factors, while the rest is influenced by other variables outside the model. However, this model is already able to provide an idea that administrative risks in project documents and schedules contribute significantly to the increase in construction claims.

V. DISCUSSION

Based on the results of the research that has been conducted, it was found that the construction contract administration system in the Ministry of Public Works has complex characteristics and requires a structured approach to avoid the occurrence of claims. An analysis of the stages of contract administration shows that not all stages proposed in theoretical frameworks are practically acceptable in implementation in the field. The contract preparation stage proves to be a crucial foundation in the overall contract administration process. The majority of aspects in this stage have been well met, including the completeness of documents, suitability of procedures, and administrative readiness. Although there is one aspect that is not optimal, it does not affect the substance as a whole. According to Simatupang (2022), the contract preparation stage is the foundation for reducing potential disputes because the mismatch of expectations between service providers and users can be minimized from the beginning through careful preparation of documents and comprehensive technical clarifications.

In the contract implementation stage, the research showed that the process of monitoring, control, changing work, and recording field instructions had gone well even though there was still room for improvement. Beaumont (2020) emphasizes the importance of transparent execution administration to prevent inconsistencies in execution against the initial contract. Aspects that are not optimal at this stage do not necessarily thwart the administrative process as long as the principle of contract substance remains carried out consistently. The contract completion stage shows satisfactory results with the majority of indicators having shown good suitability. This phase emphasizes the handover of work, the maintenance period, and the preparation of the final report as an integral part of the closing of the contract. Smith and Bower (2019) affirm that the final report and testing of the work are a crucial part of closing all contractual obligations and avoiding post-project claims. Although one indicator is not yet optimal, this stage in principle already guarantees the sustainability and accountability of the contract.

This research also revealed that the stages of claims and risk management have not been able to run optimally. The procedures for submitting claims, risk assessment, and dispute resolution are considered not fully in accordance with applicable regulations. This shows that the risk and claims management aspects still need significant strengthening in their implementation in the field. The integration between international standards and national regulations shows encouraging results. All

contract administration activities in LKPP Regulation No. 12 of 2021 have been fully integrated with the equivalent in the FIDIC Red Book. Validation from experts shows that there are no significant conceptual differences between the two systems. Cheung et al. (2004) showed that a FIDIC-based claims management system is able to reduce the potential for disputes due to procedural clarity and definite time limits.

These findings indicate that the national system can be aligned with international standards as a best practice. However, there are still several aspects that need to be strengthened, such as clarification of terminology, adjustment of document formats, and strengthening administrative procedures that are essentially parallel but not explicitly listed in national regulations. Rahman and Kumaraswamy (2005) emphasize the importance of process integration in contract management systems to reduce inconsistencies between international and local standards. The risk analysis in this study uses a process-based approach that allows the identification of risks arising from the asynchronous interaction between activities in each stage of administration. This approach is different from analysis that only looks at specific activities, which usually only focuses on technical risks in one section. By analyzing risks based on process stages, important risks can be identified that affect many parts of the project, such as communication problems, errors in administrative procedures, or lack of coordination in document recording.

The results of the analysis showed that there were fifteen high risks that had been identified and categorized into four main groups. These risks include human and organizational aspects, documents and procedures, scheduling and reporting, and technology monitoring and evaluation. Each risk category has different characteristics and impacts on the potential for claims to arise in construction projects. Hypothesis testing using linear regression analysis showed interesting findings. Risks related to contract documents and procedures as well as project scheduling and reporting have proven to have a significant influence on the occurrence of claims. This is indicated by a significance value of less than 0.05, which indicates that weaknesses in the management of contract documents and reporting irregularities are the dominant factors causing claims.

These findings are in line with Zaneldin's (2006) research which showed that more than half of claims in construction projects are caused by weaknesses in contract documents, including unclear technical specifications, design changes, and failure to deliver instructions documentedly. Hughes et al. (2015) also emphasized that weak contract administration systems, especially in the aspects of document control and communication procedures, are the main factors that open gaps to disputes and claims. In contrast, risks related to human and organizational resources as well as technology monitoring and evaluation did not show a significant influence on the occurrence of claims. This indicates that organizational and technological aspects, although they play an important role in supporting system efficiency, have not shown a direct influence on the occurrence of claims if they are not accompanied by orderly management of documents and procedures.

The identification of priority risks shows that there are three main risks that need special attention. The first is the change of administrative officers that interfere with the continuity of contract management. This risk often occurs due to employee mutation or rotation without an adequate document handover process. Andi (2005) emphasized that risks related to human resources need to be identified and managed systemically from the beginning of the project because they greatly affect the continuity of work and the accuracy of administrative documentation. The second risk that is a priority is irregularity in recording field orders or instructions. In practice, work orders are often delivered orally without being followed by formal recording, even though each instruction must be written and recorded in accordance with applicable regulations.

Seng Hansen and Rostiyanti (2019) show that poor documentation of technical instructions is one of the main causes of contract disputes and payment errors. The third risk is the weak monitoring system in the implementation of contracts. Wibowo et al. (2018) emphasizes that weak monitoring causes delays in identifying deviations in quality, cost, and time. Without a robust monitoring system, decision-making becomes reactive and not risk-based, which can ultimately trigger claims from various parties involved in construction projects.

VI. CONCLUSION

This study concludes that the effectiveness of construction contract administration within the Ministry of Public Works can be improved through a thorough integration between LKPP Regulation No. 12 of 2021 and the FIDIC Red Book. The three main administrative stages—preparation, execution, and completion of

contracts—can be synergistically integrated through 23 activities, most of which already have terminological and procedural alignment. However, there is still a need to improve documentation and recording systems, especially in terms of providing instructions and managing claims. This study identified 15 main administrative risks, of which three are personnel turnover without transition, orderly instruction documentation, and weak monitoring systems have the highest exposure to contract claims. Regression analysis proves that the efficiency of contract execution is inversely proportional to the frequency of claims that arise. Therefore, a digital-based administrative management system is needed that prioritizes document integrity, clarity of responsibility, and the use of information technology. The implementation of contract policies based on the principles of accountability and synchronization between national regulations and international standards is believed to be able to reduce potential conflicts and increase the transparency of government construction projects.

APPENDIX

This appendix contains the administrative activities of construction contracts that have been validated through a triangulation approach: expert validation, instrument trials, and field surveys. Based on the integration of LKPP Regulation No. 12 of 2021 and the FIDIC Red Book, there are three main stages: contract preparation stages, contract implementation, and contract completion, with a total of 23 administrative activities. These activities include, among others, the issuance of SPPBJ, implementation preparation meetings, personnel assignments, submission of implementation guarantees, implementation of MC-0, recording of field instructions, payments based on achievement, implementation of PHO/FHO, as well as risk and claim documentation. This attachment also lists key risk indicators in contract implementation, including weak communication, personnel turnover without transition, and lack of use of digital technology in project monitoring. Each activity and risk is identified based on relevance to potential claims, and validated through a matrix of impact levels and frequency. This information is an important reference in the formulation of an integrated contract administration system based on national regulations and international standards to be implemented effectively within the Ministry of Public Works and Public Works.

ACKNOWLEDGMENT

The author expressed his appreciation and gratitude to all resource persons, validation experts, and professional respondents within the Ministry of Public Works who have participated in this study. Their contribution is very meaningful in enriching the substance of the analysis and ensuring the validity of the data produced. Thank you also to the academic institution for the technical and administrative support provided during the research process.

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