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Determining Procurement Strategy Alternatives Through The Identification And Assessment Of Delay Risks In Procurement Activities For Public School Construction Projects In DKI Jakarta Province

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Abstract

Public school building construction projects in DKI Jakarta Province are one of the government's strategic programs to improve the quality of educational facilities. In their implementation, the construction procurement process plays an important role in determining project success, particularly in terms of timely completion. However, various activities within the procurement process have the potential to create delay risks that may affect overall project performance. This study aims to identify activities in the construction procurement process that have the potential to cause delays and to assess delay risks based on two main dimensions, namely risk impact and likelihood of occurrence. The research method used is descriptive qualitative with a case study approach. Data collection techniques include observation, survey (Likert-scale questionnaire), document study, and archive analysis. The research respondents consist of parties directly involved in the construction procurement process. Data analysis is conducted using descriptive qualitative analysis and risk analysis to determine the level of risk for each procurement activity. The results of this study are expected to provide an overview of critical activities in the procurement process that have the potential to cause delays and serve as a basis for improving construction procurement management in public school building projects in DKI Jakarta Province. Based on the results of the risk analysis, the highest-risk factors are identified and selected, and procurement strategies are then formulated to minimize the risk of delays in public school building construction projects in DKI Jakarta Province.

Keywords: ***Construction Procurement, Delay Risk, School Building Projects, Risk Analysis, Dki Jakarta***

INTRODUCTION

Educational infrastructure development, including the construction of public school buildings, is a top priority in efforts to improve the quality of education in Indonesia. The Jakarta Provincial Government, as the center of government and the largest metropolitan city in Indonesia, has allocated a significant budget annually to support the construction and improvement of public school facilities. However, the reality on the ground shows that the performance of school building construction projects in this region remains far from expectations. Many school building projects have encountered various obstacles, ranging from slow procurement processes, failed tenders, and delays in asset write-offs, resulting in delays in project implementation and completion.

Figure 1. Delays in Jakarta Public School Construction Projects 2021-2024
Source: Author's Editing, 2026

The annual contract process tends to be finalized in August/September due to the lengthy procurement process. Consequently, the construction of public school buildings in the DKI Jakarta Province is consistently incomplete in the current fiscal year, and the remaining payments become regional debt, which can be paid through the Regional Budget Amendment mechanism in the following fiscal year, in accordance with the provisions of the single-year contract type. This impacts the contractor's cash flow, resulting in slow construction performance.

This poor performance not only results in the failure to complete projects on time and within budget (cost and time overruns), but also hampers the learning process due to damaged, unfinished, or unsuitable school buildings. This creates psychological and practical burdens for students, teachers, and parents. Furthermore, this failure tarnishes the image of the DKI Jakarta Provincial Government as a public service provider. Several key factors often associated with the poor performance of public school construction projects in Jakarta include: weak project management, lack of technical capacity of the implementing contractor, the tender process, and lack of oversight from technical agencies during construction. Furthermore, external factors such as political dynamics, changes in budget policies, and extreme weather conditions also pose obstacles. Based on these conditions, a study is needed to identify procurement process activities that have the potential to cause delays and to assess risks based on two dimensions, namely impact and likelihood of occurrence. Thus, the results of this study are expected to provide input for improving the effectiveness of construction procurement management in public school building projects in DKI Jakarta Province.

RESEARCH METHODS

Research Object

To identify the activities involved in the construction procurement process for the development of Public School Buildings in the Province of DKI Jakarta.

To identify the activities within the procurement process that have the potential to cause delays in the construction of Public School Buildings in the Province of DKI Jakarta.

Research Approach

The research employs a quantitative descriptive approach, with data collected through literature reviews, examination of government procurement regulations, project document analysis, and questionnaires distributed to respondents with expertise and experience in construction procurement. Data analysis was conducted using risk analysis to identify procurement activities with the highest potential risks that could lead to project delays.

Research Type

This research is a case study. Case studies are used to investigate in detail a specific phenomenon, event, or policy that occurs in a real and actual context (Yin, 2018). In this research, the case study is a public school building construction project in DKI Jakarta that implemented a procurement packaging strategy based on the type of work.

Research Strategy

Developing an appropriate research strategy is necessary to ensure that the researcher obtains relevant research results that align with the author's objectives. The research strategy outlines how the researcher will conduct the research. According to Yin (2003), there are three factors that influence the type of research strategy, including:

1. The type of research question posed, which involves who, what, where, and how many, using the survey method.
2. The extent of control the researcher has over the beavioral evenste being studied.
3. Focus on contemporary events as opposed to historical events

According to Yin (2003), there are five types of research strategies: experiments, surveys, archival analysis, historical research, and case studies. Therefore, The research strategies employed to address the research questions in this study are as follows:

No.	Statement of Problem	Research Questions	Research Strategies	Subjects/ Responden	Data Analysis Techniques	Refrences
1	What are the process activities involved in the construction procurement of public school building projects in DKI Jakarta Province ?	What	Observation of the procurement administration process, Survey, Questionnaire, Document analysis	Procurement documents and stakeholders directly involved in the construction procurement process for public school building projects in DKI Jakarta Province	Qualitative descriptive data analysi	Kerzner (2017), PMI (2017), Sugiyono (2019)
2	What activities in the procurement process cause delays in the construction of public school building projects in DKI Jakarta Province	What	Survey (Likert-scale questionnaire) Document analysis	Procurement documents and stakeholders directly involved in the construction procurement process for public school building projects in DKI Jakarta Province	Risk analysis is conducted to assess two dimensions of risk, namely risk impact and risk likelihood of occurrence	PMBOK, Perpres 16/2018 Jo. Perpres 46/2025, Perlem LKPP No 11 Tahun 2021, Perlem LKPP No. 12/2021,

Research Process

The research process is carried out systematically through the following stages:

1. Problem Identificate stage
2. Literatur Review
3. Determination of Research Variables
4. Data Collection
5. Data Processing
6. Risk Analysis
7. Results and Discussion
8. Conclusion and recommendations

RESULTS AND DISCUSSION

Activities That Cause a Relatively Long Procurement Process

Based on the results of the risk analysis, the procurement process activities that have the potential to cause the procurement process to take a long time are as follows:

Table 1. Activity Mapping

No.	Activity / Variable	Sub-Activity / Sub-Variable	Indicator	Average Frequency Score	Average Impact Score	Risk Value	Category
1	Procurement Planning	Preparation of Procurement Plan	Inefficient and ineffective packaging strategy based on project delays occurring within the recent period	0.605	0.605	0.366	High Risk
2	Construction Service Selection Implementation	Determination of Winner	Tender failure due to the absence of participants meeting the requirements, and the technical/cost clarification and negotiation process failing to reach an agreement	0.605	0.605	0.366	High Risk
3	Procurement Preparation	Review (Determination of Technical Specifications and Owner's Cost Estimate/HPS)	Review process is delayed because the selected Construction Management consultant is not yet available as procurement is still ongoing	0.552	0.552	0.305	High Risk
4	Construction Service Selection Implementation	Objection Period	A large number of participants submit objections	0.552	0.552	0.305	High Risk

No.	Activity / Variable	Sub-Activity / Sub-Variable	Indicator	Average Frequency Score	Average Impact Score	Risk Value	Category
5	Construction Service Selection Implementation	Determination of Prospective Winner	No participant meets the requirements, resulting in a failed tender	0.533	0.533	0.284	High Risk
6	Construction Service Selection Implementation	Qualification Verification and Negotiation	Inconsistencies in documents during clarification, or negotiations fail to reach an agreement	0.514	0.514	0.264	High Risk
7	Construction Service Selection Implementation	Submission of Bid Documents	Errors in the submission of bid documents due to various factors	0.500	0.500	0.250	Moderate Risk
8	Construction Service Selection Implementation	Administrative, Qualification, Technical, and Price Evaluation	Evaluation period exceeds the planned schedule due to the large number of participant documents requiring clarification	0.495	0.495	0.245	Moderate Risk
9	Construction Service Selection Implementation	Opening of Bid Documents	Bid documents do not meet the required criteria	0.471	0.471	0.222	Moderate Risk
10	Construction Service Selection Preparation	Determination of Selection Method	Numerous clarifications or corrections from the Construction Management Consultant (MK) or Procurement Working Group (Pokja) regarding the selected method	0.424	0.429	0.182	Moderate Risk
11	Construction Service	Provision of Explanations	Participant dissatisfaction	0.410	0.410	0.168	Moderate Risk

No.	Activity / Variable	Sub-Activity / Sub-Variable	Indicator	Average Frequency Score	Average Impact Score	Risk Value	Category
	Selection Implementation		due to not receiving the required explanations clearly				
12	Procurement Planning	Preparation of Procurement Plan	Errors in identifying construction service requirements	0.371	0.371	0.138	Moderate Risk
13	Construction Service Selection Implementation	Registration and Download of Selection Documents	Delays in participant registration and inability to download procurement documents	0.338	0.338	0.114	Low Risk
14	Procurement Preparation	Preparation of Draft Contract	Delay in the preparation of the draft contract	0.300	0.300	0.090	Low Risk
15	Procurement Planning	Procurement Plan Announcement through the General Procurement Plan Information System (SIRUP)	Incomplete information in the announcement	0.233	0.233	0.054	Low Risk
16	Procurement Planning	Procurement Plan Announcement through the General Procurement Plan Information System (SIRUP)	Errors in entering the announcement schedule/time	0.214	0.248	0.053	Low Risk
17	Construction Service Selection Implementation	Letter of Appointment for Goods/Services Provider (SPPBJ)	Issuance of the SPPBJ without review by the Commitment-Making Official (PPK)	0.143	0.143	0.020	Low Risk

No.	Activity / Variable	Sub-Activity / Sub-Variable	Indicator	Average Frequency Score	Average Impact Score	Risk Value	Category
			and Budget User Authority (PA) due to time constraints				

Source: Author's Processing, 2026

Based on the results of the mapping of procurement delay factors, the three most significant factors contributing to the lengthy procurement process were identified:

Mistakes in procurement strategy formulation at the procurement planning stage.

Based on Presidential Regulation 46 of 2025 concerning the Second Amendment to Presidential Regulation Number 16 of 2018 concerning Government Procurement of Goods/Services, procurement packaging activities are part of the procurement planning stage. According to the research, both from respondents' statements and observations in documents, the same procurement strategy is applied annually, resulting in delays in the construction of public school buildings in DKI Jakarta Province.

Based on the procurement history, the construction service selection process began from April 30, 2025, to August 14, 2025. Therefore, it can be concluded that the period from January 2025 to April 2025 was the procurement planning, procurement preparation, and construction service selection process. Therefore, the procurement process took eight months. However, a document review indicates that the contract for the work was dated September 2025 using a single contract, leaving approximately four months remaining for the work.

Cancelled Tender

Based on Presidential Regulation No. 46 of 2025 concerning the Second Amendment to Presidential Regulation No. 16 of 2018 concerning Government Procurement of Goods/Services, tender failure is a potential risk that can occur during the supplier selection stage. In 2023, after the tender failed, a repeat tender was held, but the result was again unsuccessful, leading to the decision not to proceed with the work on that package in 2023. Meanwhile, in 2024, the tender failed once and a winner was subsequently selected. However, due to the protracted process, the remaining work completion time was only approximately 4 months.

The review was hampered by the unavailability of a selected Construction Management Agency due to the ongoing procurement process.

Based on Presidential Regulation 46 of 2025 concerning the Second Amendment to Presidential Regulation Number 16 of 2018 concerning Government Procurement of Goods/Services, the obligation to plan and prepare procurement includes the preparation of technical specifications and the Self-Estimated Price (HPS) for construction management consulting before the tender stage begins.

Based on the procurement history for Construction Management Consulting Services, the selection process began on December 24, 2024, and ended on February 14, 2025, lasting approximately two months. This process also impacted the procurement preparation process, requiring the Contracting Minister (MK) to conduct evaluations with the Procurement Committee (PPK) and the Working Group (Pokja) during procurement preparation to ensure that the needs, feasibility, and construction budget have been carefully considered, ensuring the project runs efficiently and effectively.

Based on this, the procurement process activity history matrix, from the MK procurement to the Construction Services procurement, can be summarized as follows:

Table 4. Procurement Process Activity History Matrix

No.	Activity	Month 12	1	2	3	4	5	6	7	8	9	10	11	12
1	Construction Management (CM) Procurement													
2	Construction Services Procurement													
3	Work Implementation													

Source: Author's Processing, 2026

Based on the DED planning documents (2023 and 2024) prepared by the Planning Consultant, the construction time required is approximately 8 months. The remaining 4 months, with a single-year contract, significantly impacts the potential for delays in school building construction. The delay is due to the inability to complete the work within the timeframe stipulated in the contract. Due to this delay, the school building cannot be immediately utilized as planned, and the Provider will be subject to substantial fines, potentially giving rise to disputes.

Proposed Alternative Construction Procurement Strategies

Based on the risk analysis, errors in procurement strategy formulation at the procurement planning stage are identified as the dominant cause of delays in public school building construction projects in Jakarta Province. Therefore, the following procurement strategy alternatives may be considered:

Table 5. Procurement Strategy Recommendations

No.	Criteria	Existing Strategy	Recommended Strategy
1	Procurement Strategy	Design–Bid–Build	Design–Bid–Build
2	Packaging Method	Administrative City-Based Location	Subdistrict-Based Location
3	Selection Method	Tender	E-Purchasing; Mini Competition
4	Contract Type	Single Contract	Multiple Contract

Source: Author's Editing, 2026

Based on the following matrix:

No.	Description	Advantages of the Recommended Strategy
1	Efficiency	• Packaging based on subdistrict locations is more relevant to the number of project sites. • The e-purchasing selection method improves procurement efficiency, allowing more optimal time availability for project implementation. • Minimizes the potential for delay penalties, resulting in greater project efficiency and reducing the likelihood of contractors lowering work specification quality.
2	Effectiveness	• Packaging based on subdistrict locations results in multiple contractors being assigned to specific project sites, enabling more focused and effective work execution. • Project management becomes more coordinated because multiple locations are managed under a single contract based on subdistrict areas.

		• Standardization of technical specifications, work quality, and implementation methods can be applied consistently across all schools within the package.
3	Timeliness	• The e-Purchasing Mini Competition method involves a simpler process compared to conventional tendering. • The contractor selection period is shorter because participants are drawn from suppliers already registered in the electronic catalog. • Accelerated procurement processes support faster project implementation.
4	Risk Control	• The risk of project delays is minimized through the use of the e-purchasing selection method and multi-year contracts. • Quality-related risks are reduced because the potential burden of delay penalties on construction service providers is minimized, allowing them to focus on project execution. • The potential for disputes related to delay penalties is significantly reduced.
5	Work Quality	• Under the Design–Bid–Build method, designs are prepared by the planning consultant, ensuring that both design and budgeting processes are developed in an accountable manner and minimizing the likelihood of design changes during implementation. • The project owner and construction contractor can focus on executing the work according to the established drawings and specifications.
6	Regulatory Compliance	• The recommended strategy complies with Presidential Regulation No. 46 of 2025 concerning the Second Amendment to Presidential Regulation No. 16 of 2018 on Government Procurement of Goods and Services. • The adoption of the e-purchasing method complies with Article 9 paragraph (1) letter n and Article 38 paragraphs (1) and (2) of Presidential Regulation No. 46 of 2025, as well as LKPP Head Decree No. 93 of 2025 concerning the Implementation of Electronic Catalog E-Purchasing through the Mini Competition Method.

Design Bid Build

Design bid build is the most appropriate method for the construction of public school buildings in Jakarta Province, considering that school building projects are not complex, are not urgent, and require gubernatorial approval.

The necessary steps include conducting a thorough site identification survey, preparing a complete Design and Development Plan (DED), developing clear technical specifications that are free from interpretation, preparing a Budget and Budget (RAB) based on current market prices, and conducting a design review involving various stakeholders in Jakarta Province.

Packaging Based on Sub-district Location

Location-based packaging adheres to the principle of efficiency as explained in the regulations, namely the procurement of goods/services distributed across locations/regions that, based on the nature of the work and its efficiency, should be carried out in several locations/regions (Presidential Regulation 46 of 2025).

Mini-Competition E-purchasing

The selection of Construction Work Providers using the Mini-Competition E-purchasing method through the spse.inaproc.id system is regulated by Presidential Regulation 46 of 2025 concerning the Second Amendment to Presidential Regulation Number 16 of 2018 concerning Government Procurement of Goods/Services.

In order to enhance transparency and accountability in the procurement process through the Electronic Catalog Version 6, the Government Goods/Services Procurement Policy Agency (LKPP) requires the use of the Mini-Competition method for the construction sector as a competitive supplier

selection mechanism. This policy aligns with the the issuance of Presidential Regulation No. 46 of 2025 concerning the Second Amendment to Presidential Regulation No. 16 of 2018 concerning Government Goods/Services Procurement and Decree of the Head of LKPP No. 93 of 2025 concerning the Implementation of Electronic Catalog E-Purchasing through the Mini-Competition Method. Based on these regulations, it can be concluded that implementing construction procurement through the Mini-Competition E-Purchasing is an alternative method that can be implemented for the procurement of public school buildings in DKI Jakarta Province.

Stages of Electronic Catalog E-Purchasing through the Construction Work Competition Method

Preparation for the Construction Work Mini-Competition

Preparation for the Construction Work Mini-Competition is carried out by compiling and preparing the necessary Competition Documents for the Mini-Competition, including:

a. Technical Specifications of the Work (including the Detailed Engineering Design (DED);
b. Competition Ceiling;

The competition ceiling is the total estimated construction work units determined by the PPK, which has taken into account indirect costs, profits, and taxes in accordance with the provisions applicable to each mini-competition package. The competition ceiling is the highest limit for competition participants' bids.

c. Plan for the application of down payments and down payment guarantees (if any);
   Plan for the application of Bid Bonds (if any) for competition ceiling values exceeding IDR 10,000,000,000.00 (ten billion rupiah) with a value of 1% (one percent) to 3% (three percent) of the competition ceiling value.
d. Plan for the application of performance guarantees (if any); and
e. Other requirements or documents required for the Construction Work (if any).

Implementation of the Construction Work Mini-Competition

The Construction Work Mini-Competition is implemented through the following stages:

a. Competition Package Creation by the Procurement Committee (PPK).
b. The PPK creates the competition package by selecting the General Procurement Plan (RUP) and creating a competition title.
c. The PPK establishes the competition schedule for the competition participant bidding period.
d. The PPK/Selection Working Group determines the product details for the mini-competition, which consist of:

1) Selecting Product Categories related to the Construction Work, sequentially from Level I, Level II, and Level III Product Categories;
2) Filling in the work item (product) requirements and, if necessary, supplier requirements;
3) Filling in the competition ceiling price per work item (product) for which the mini-competition will be conducted; and
4) Filling in the product volume/quantity and product units for which the mini-competition will be conducted.

The Electronic Catalog application will calculate the competition ceiling price per work item (product) and the volume/quantity of goods/services submitted for the mini-competition. The calculation results will determine the total competition ceiling value.

e. The PPK/Selection Working Group may specify more than one type of work item (product) for the mini-competition.
f. The PPK/Selection Working Group determines the business qualifications for competition participants eligible to participate in the mini-competition, as follows:

The total competition ceiling value of up to IDR 15,000,000,000.00 (fifteen billion rupiah) is allocated to Electronic Catalog Providers with small business qualifications. If the package requires technical capabilities that cannot be met by providers with small business qualifications, it may be allocated to providers with medium business qualifications. 2) The total competition ceiling value of

more than IDR 15,000,000,000.00 (fifteen billion rupiah) to IDR 50,000,000,000.00 (fifty billion rupiah) is allocated for providers with medium-sized business qualifications. If the package requires technical capabilities that cannot be met by providers with medium-sized business qualifications, it may be allocated to providers with large-sized business qualifications; and/or

1) The total competition ceiling value of more than IDR 50,000,000,000.00 (fifty billion rupiah) is allocated for large businesses.
2) The PPK/Selection Working Group determines the form of payment for work performance, whether in installments or a lump sum.
3) The PPK/Selection Working Group determines the delivery location for goods/services and sets a deadline for completion of the work, which is the deadline for the selected competition participants to complete the work (work implementation period).
4) The PPK/Selection Working Group uploads the competition documents. The competition documents are used as requirements for selecting Construction Work Providers in the mini-competition process.
5) The PPK/Selection Working Group will finalize the competition package by announcing (publicating) the competition to all Electronic Catalog Providers.

Competition Bidding

a. Competition participants may submit bids if they have a KBLI that meets the KBLI requirements for all Level III Product Categories selected by the PPK/Selection Working Group for the mini-competition. To submit a bid, competition participants must have included work items (products) in all Level III Product Categories selected by the PPK/Selection Working Group.
b. If a competition participant is Blacklisted, they cannot submit a competition bid.
c. Competition participants must submit bids for all work items.
d. Competition participants submit their competition bids in the following stages:

Competition participants must have a product listed in the Level III Product Category selected by the PPK/Selection Working Group for the mini-competition.

Competition participants select work items (products) listed in the Electronic Catalog application that meet the specifications or requirements determined by the PPK/Selection Working Group.

Competition participants must complete all pricing data for the products to be bid on. The product price offered includes profit, indirect costs (overhead), and taxes in accordance with applicable regulations; and

Competition participants must upload the documents required by the PPK/Selection Working Group (if any requirements require document upload).

Competition participants may submit bid prices as long as they do not exceed the total competition ceiling determined by the PPK/Selection Working Group.

Bids completed by competition participants during the mini-competition cannot be canceled.

Providing Explanations

If necessary, the PPK/PP/Selection Working Group can schedule an explanation for competition participants regarding the mini-competition process being conducted in the Electronic Catalog application (this feature can be implemented if it is already available in the Electronic Catalog application).

After the competition bidding process is complete, the Electronic Catalog application will compile a ranking list of competition participants' bids, hereinafter referred to as the Competition Leaderboard. Bids eligible for the competition leaderboard are those that have submitted bids for all work items (products).

Based on the competition leaderboard results as referred to in letter f above, the PPK/PP/Selection Working Group will select the potential competition winner by evaluating the competition participant in the first place. If the evaluation results reveal an inappropriate bid or a competition participant is Blacklisted and therefore disqualified, the PPK/Selection Working Group

will evaluate the next-ranked competition participants until a potential winner meets the requirements. The evaluations conducted by the PPK/PP/Selection Working Group during the bid evaluation stage are as follows:

a. Fulfillment of Remaining Package Capacity (SKP)
b. Technical Evaluation
c. Price Fairness Evaluation

Determination of Competition Winner

Based on the evaluation results, the PPK/Selection Working Group will determine the competition winner.

Multi-Year Contracts

Multi-year contracts are regulated by the Regulation of the Governor of the Special Capital Region of Jakarta Number 38 of 2025 concerning the procedures for proposing and budgeting multi-year activities. Therefore, based on this regulation, the Multi-Year Contract Type can be implemented in the construction of public school buildings in the DKI Jakarta Province.

CONCLUSIONS

Based on the analysis conducted, the study reached several key conclusions. First, the procurement process for the construction of public school buildings in the Province of DKI Jakarta was carried out by the Provincial Procurement Working Group (Pokja UPBJ) through stages including procurement planning, procurement preparation, construction service selection preparation, contractor selection, contract implementation, and work acceptance and inspection. The entire process was conducted transparently through the electronic procurement system managed by the Provincial Procurement Service Agency and the National Public Procurement Agency. Although the procurement procedures complied with applicable regulations, delays occurred at all construction sites, preventing the school buildings from being utilized as planned and resulting in penalties for contractors.

Second, the study identified three high-risk activities that contributed significantly to project delays: one during the planning stage, one during procurement preparation, and one during the contractor selection stage. The procurement process itself lasted approximately eight months, leaving only about four months for construction after the contract was signed in September 2025 under a single-year contract scheme. Among these factors, the packaging of procurement packages during the planning stage was found to be the highest-risk activity, highlighting the need for improved procurement strategies to reduce future delays.

Based on the risk analysis, errors in procurement strategy formulation at the procurement planning stage are identified as the dominant cause of delays in public school building construction projects in Jakarta Province. Therefore, the following procurement strategy alternatives may be considered

Based on the risk analysis results, the recommended procurement strategy consists of the Design-Bid-Build method, location-based procurement packaging, e-purchasing as the procurement method, and multiple contracting arrangements. These strategies are expected to minimize the risk of delays in future public school construction projects in DKI Jakarta.

REFERENCES

Azizah, L. (2022). *Proses Perencanaan dan Pengendalian Pada Proses Desain di PT RE Berdasarkan PMBOK 6th Edition Berbasis Risiko untuk Meningkatkan Kinerja Kualitas.*

Baily, Farmer, Jessop & Jones. (2005). *Purchasing Principles and Management* (9th ed.). London: Pearson Education.

Chartered Institute of Procurement & Supply. (2022). *Procurement and Supply Cycle*. Stamford: CIPS Publishing.

Dingbang Zhang, Hang Zhang, Tao Cheng (2020). Causes of Delay in the Construction Projects of Subway Tunnel

Ekaterina, Osipova., Per, Erik, Eriksson (2011). *How procurement options influence risk management in construction projects*.

Harold Kerzner. (2017). *Project Management: A Systems Approach to Planning, Scheduling, and Controlling* (12th ed.). New Jersey: John Wiley & Sons.

Hayssam O. Elhusseiny, Ibrahim Nosair, A. Samer Ezeldin (2020). Systematic processing framework for analyzing the factors of construction projects' delays in Egypt

H D Wuala and A D Rarasati (2020). Causes of delays in construction project for developing Southeast Asia countries

International Organization for Standardization. (2018). *ISO 31000:2018 Risk management—Guidelines*. ISO

Iwan Kurniawan, Pungky Dharma Saputra, Safri, Ridwan Saputro (2020). Development of Delay Factor Model for Substructure Works in Building Construction

Jawad A. Alsuliman (2019). Causes of delay in Saudi public construction projects

Jainendrakumar, T. (2015). The Essence of the PMBOK (Project Management is the way of life). *pmworldjurnal*.

Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah. (2025). Konsolidasi Nomor 46 Tahun 2025 Tentang Konsolidasi Peraturan Presiden Republik Indonesia Nomor 46 Tahun 2025 Tentang Perubahan Kedua Atas Peraturan Presiden Nomor 16 Tahun 2018 Tentang Pengadaan Barang/Jasa Pemerintah. Jakarta: LKPP.

Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah. (2021). Peraturan Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah Nomor 12 Tahun 2021 tentang Pedoman Pelaksanaan Pengadaan Barang/Jasa Pemerintah melalui Penyedia. Jakarta: LKPP.

Masterman, J.W.E. (2002). *An Introduction to Building Procurement Systems*. 2nd Edition. London: Spon Press.

M. Suresh and R.B. Arun Ram Nathan. (2020). Readiness for lean procurement in construction projects.

Murat Gunduz, Nasser H. Al-naimi (2021). Studi ini bertujuan untuk memberikan cara yang tepat untuk digunakan dalam mengelola proyek secara efektif dan mengurangi risiko keterlambatan.

Mona N. Shah, Saurav Dixit, Ricken Kumar, Ratika Jain, Kunal Anand (2021). Causes of delays in slum reconstruction projects in India

Mulyani, E., & Sari, R. (2018). Analisis pemaketan pengadaan untuk efisiensi proyek pemerintah. *Jurnal Administrasi Publik*, 14(2), 120–134

Morledge, R., & Smith, A. J. (2013). *Building procurement* (2nd ed.). Wiley-Blackwell.

Nabil I. El Sawalhi and Osama El Agha (2017). Multi-Attribute Utility Theory for Selecting an Appropriate Procurement Method in the Construction Projects

Novika Candra, Yusuf Latief., Eddy Subiyanto. (2018). Pengembangan Proses Perencanaan Pada Proyek Epc Berbasis PMBOK (Project Management Body Of Knowledge) Untuk Meningkatkan Kualitas Perencanaan Proyek Yang Berkaitan Dengan Kinerja Waktu Di PT. KE

Project Management Institute. (2021). *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* (7th ed.). Pennsylvania: Project Management Institute.

Per Erik Eriksson (2024). How clients choose procurement strategies and organizational control systems in the Swedish housing sector

Project Management Institute. (2017). A guide to the project management body of knowledge (PMBOK guide) (6th ed.). Project Management Institute.

Pemerintah Republik Indonesia**.** (2025). Peraturan Presiden Republik Indonesia Nomor Nomor 46 Tahun 2025 tentang Perubahan Peraturan Presiden Nomor 12 Tahun 2021 *Tentang Pengadaan Barang/Jasa Pemerintah.* Republik Indonesia.

Pemerintah Republik Indonesia**.** (2021). Peraturan Presiden Republik Indonesia Nomor 12 Tahun 2021 tentang Perubahan atas Peraturan Presiden Nomor 16 Tahun 2018 tentang Pengadaan Barang/Jasa Pemerintah. Jakarta: Pemerintah Republik Indonesia.

Per Erik Eriksson. (2017). Procurement strategies for enhancing exploration and exploitation in construction projects

Reza Mohajeri Borje Ghaleh , Towhid Pourrostam, Naser Mansour Sharifloo , Javad Majrouhi Sardroud, Ebrahim Safa (2021). Delays in the Road Construction Projects from Risk Management Perspective

Soumi, Majumder., Soumyajit, Majumder., Debasish, Biswas (2021). Impact of effective construction planning in project performance improvement.

Sugiyono (2019). Sugiyono. *Metode Penelitian Kualitatif, Kuantitatif, dan R&D*. Bandung: Alfabeta.

Shehryar Idrees, Muhammad Tariq Shafiq (2021). Factors for Time and Cost Overrun in Public Projects

Usman Ismaila, Wooyong Jung, and Chan Young Park (2022). Delay Causes and Types in Nigerian Power Construction Projects.

Yusuf Lateef Oladimeji, and Folorunso Olusegun (2018). E-procurement: A Strategic Approach to Public.

Zhao, N.; Ying, F.J.; Tookey, J (2022). Construction Procurement Selection Criteria: A Review and Research Agenda